LOCUS NM_005099 4342 bp mRNA linear PRI 26-JAN-2004
DEFINITION Homo sapiens a disintegrin-like and metalloprotease (reprolysin type) with thrombospondin type 1 motif, 4 (ADAMTS4), mRNA.
ACCESSION NM_005099
VERSION NM_005099.3 GI:41327755
KEYWORDS .
SOURCE Homo sapiens (human)
ORGANISM Homo sapiens
Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Primates; Catarrhini; Hominidae; Homo.
REFERENCE 1 (bases 1 to 4342)
AUTHORS Clark,H.F., Gurney,A.L., Abaya,E., Baker,K., Baldwin,D., Brush,J., Chen,J., Chow,B., Chui,C., Crowley,C., Currell,B., Deuel,B., Dowd,P., Eaton,D., Foster,J., Grimaldi,C., Gu,Q., Hass,P.E., Heldens,S., Huang,A., Kim,H.S., Klimowski,L., Jin,Y., Johnson,S., Lee,J., Lewis,L., Liao,D., Mark,M., Robbie,E., Sanchez,C., Schoenfeld,J., Seshagiri,S., Simmons,L., Singh,J., Smith,V., Stinson,J., Vagts,A., Vandlen,R., Watanabe,C., Wieand,D., Woods,K., Xie,M.H., Yansura,D., Yi,S., Yu,G., Yuan,J., Zhang,M., Zhang,Z., Goddard,A., Wood,W.I., Godowski,P. and Gray,A.
TITLE The secreted protein discovery initiative (SPDI), a large-scale effort to identify novel human secreted and transmembrane proteins: a bioinformatics assessment
JOURNAL Genome Res. 13 (10), 2265-2270 (2003)
PUBMED 12975309
REFERENCE 2 (bases 1 to 4342)
AUTHORS Wang,W.M., Lee,S., Steiglitz,B.M., Scott,I.C., Lebares,C.C., Allen,M.L., Brenner,M.C., Takahara,K. and Greenspan,D.S.
TITLE Transforming growth factor-beta induces secretion of activated ADAMTS-2. A procollagen III N-proteinase
JOURNAL J. Biol. Chem. 278 (21), 19549-19557 (2003)
PUBMED 12646579
REMARK GeneRIF: ADAMTS-2 metalloproteinase is shown to cleave procollagen III N-propeptides as effectively as those of procollagens I and II
REFERENCE 3 (bases 1 to 4342)
AUTHORS Flannery,C.R., Zeng,W., Corcoran,C., Collins-Racie,L.A., Chockalingam,P.S., Hebert,T., Mackie,S.A., McDonagh,T., Crawford,T.K., Tomkinson,K.N., LaVallie,E.R. and Morris,E.A.
TITLE Autocatalytic cleavage of ADAMTS-4 (Aggrecanase-1) reveals multiple glycosaminoglycan-binding sites
JOURNAL J. Biol. Chem. 277 (45), 42775-42780 (2002)
PUBMED 12202483
REMARK GeneRIF: Autocatalytic cleavage reveals multiple glycosaminoglycan-binding sites
REFERENCE 4 (bases 1 to 4342)
AUTHORS Malfait,A.M., Liu,R.Q., Ijiri,K., Komiya,S. and Tortorella,M.D.
TITLE Inhibition of ADAM-TS4 and ADAM-TS5 prevents aggrecan degradation in osteoarthritic cartilage

JOURNAL J. Biol. Chem. 277 (25), 22201-22208 (2002)
PUBMED 11956193
REMARK GeneRIF: Inhibition of ADAM-TS4 and ADAM-TS5 prevents aggrecan degradation in osteoarthritic cartilage.
REFERENCE 5 (bases 1 to 4342)
AUTHORS Westling,J., Fosang,A.J., Last,K., Thompson,V.P., Tomkinson,K.N., Hebert,T., McDonagh,T., Collins-Racie,L.A., LaVallie,E.R., Morris,E.A. and Sandy,J.D.
TITLE ADAMTS4 cleaves at the aggrecanase site (Glu373-Ala374) and secondarily at the matrix metalloproteinase site (Asn341-Phe342) in the aggrecan interglobular domain
JOURNAL J. Biol. Chem. 277 (18), 16059-16066 (2002)
PUBMED 11854269
REMARK GeneRIF: has a specific cleavage site at the matrix metalloproteinase site in its interglobular domain
REFERENCE 6 (bases 1 to 4342)
AUTHORS Gao,G., Westling,J., Thompson,V.P., Howell,T.D., Gottschall,P.E. and Sandy,J.D.
TITLE Activation of the proteolytic activity of ADAMTS4 (aggrecanase-1) by C-terminal truncation
JOURNAL J. Biol. Chem. 277 (13), 11034-11041 (2002)
PUBMED 11796708
REMARK GeneRIF: activation of proteolytic activity by C-terminal truncation
REFERENCE 7 (bases 1 to 4342)
AUTHORS Yamanishi,Y., Boyle,D.L., Clark,M., Maki,R.A., Tortorella,M.D., Arner,E.C. and Firestein,G.S.
TITLE Expression and regulation of aggrecanase in arthritis: the role of TGF-beta
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PUBMED 11801682
REMARK GeneRIF: Aggrecanase-1 is expressed by fibroblast-like synoviocytes from rheumatoid arthritis and osteoarthritis patients and is induced by cytokines, especially TGF-beta.
REFERENCE 8 (bases 1 to 4342)
AUTHORS Hirohata,S.
TITLE ADAMTS family--new extracellular matrix degrading enzyme
JOURNAL Seikagaku 73 (11), 1333-1337 (2001)
PUBMED 11831030
REMARK GeneRIF: extracellular matrix degrading enzyme
REFERENCE 9 (bases 1 to 4342)
AUTHORS Nakamura,H., Fujii,Y., Inoki,I., Sugimoto,K., Tanzawa,K., Matsuki,H., Miura,R., Yamaguchi,Y. and Okada,Y.
TITLE Brevican is degraded by matrix metalloproteinases and aggrecanase-1 (ADAMTS4) at different sites
JOURNAL J. Biol. Chem. 275 (49), 38885-38890 (2000)
PUBMED 10986281
REFERENCE 10 (bases 1 to 4342)
AUTHORS Tortorella,M., Pratta,M., Liu,R.Q., Abbaszade,I., Ross,H., Burn,T. and Arner,E.
TITLE The thrombospondin motif of aggrecanase-1 (ADAMTS-4) is critical for aggrecan substrate recognition and cleavage
JOURNAL J. Biol. Chem. 275 (33), 25791-25797 (2000)
PUBMED 10827174
REFERENCE 11 (bases 1 to 4342)
AUTHORS Matthews,R.T., Gary,S.C., Zerillo,C., Pratta,M., Solomon,K., Arner,E.C. and Hockfield,S.
TITLE Brain-enriched hyaluronan binding (BEHAB)/brevican cleavage in a glioma cell line is mediated by a disintegrin and metalloproteinase with thrombospondin motifs (ADAMTS) family member

JOURNAL J. Biol. Chem. 275 (30), 22695-22703 (2000)
PUBMED 10801887
REFERENCE 12 (bases 1 to 4342)
AUTHORS Tortorella,M.D., Pratta,M., Liu,R.Q., Austin,J., Ross,O.H., Abbaszade,I., Burn,T. and Arner,E.
TITLE Sites of aggrecan cleavage by recombinant human aggrecanase-1 (ADAMTS-4)
JOURNAL J. Biol. Chem. 275 (24), 18566-18573 (2000)
PUBMED 10751421
REFERENCE 13 (bases 1 to 4342)
AUTHORS Hurskainen,T.L., Hirohata,S., Seldin,M.F. and Apte,S.S.
TITLE ADAM-TS5, ADAM-TS6, and ADAM-TS7, novel members of a new family of zinc metalloproteases. General features and genomic distribution of the ADAM-TS family
JOURNAL J. Biol. Chem. 274 (36), 25555-25563 (1999)
PUBMED 10464288
REFERENCE 14 (bases 1 to 4342)
AUTHORS Abbaszade,I., Liu,R.Q., Yang,F., Rosenfeld,S.A., Ross,O.H., Link,J.R., Ellis,D.M., Tortorella,M.D., Pratta,M.A., Hollis,J.M., Wynn,R., Duke,J.L., George,H.J., Hillman,M.C. Jr., Murphy,K., Wiswall,B.H., Copeland,R.A., Decicco,C.P., Bruckner,R., Nagase,H., Itoh,Y., Newton,R.C., Magolda,R.L., Trzaskos,J.M., Burn,T.C. et al.
TITLE Cloning and characterization of ADAMTS11, an aggrecanase from the ADAMTS family
JOURNAL J. Biol. Chem. 274 (33), 23443-23450 (1999)
PUBMED 10438522
REFERENCE 15 (bases 1 to 4342)
AUTHORS Tortorella,M.D., Burn,T.C., Pratta,M.A., Abbaszade,I., Hollis,J.M., Liu,R., Rosenfeld,S.A., Copeland,R.A., Decicco,C.P., Wynn,R., Rockwell,A., Yang,F., Duke,J.L., Solomon,K., George,H., Bruckner,R., Nagase,H., Itoh,Y., Ellis,D.M., Ross,H., Wiswall,B.H., Murphy,K., Hillman,M.C. Jr., Hollis,G.F., Arner,E.C. et al.
TITLE Purification and cloning of aggrecanase-1: a member of the ADAMTS family of proteins
JOURNAL Science 284 (5420), 1664-1666 (1999)
PUBMED 10356395
REFERENCE 16 (bases 1 to 4342)
AUTHORS Tang,B.L. and Hong,W.
TITLE ADAMTS: a novel family of proteases with an ADAM protease domain and thrombospondin 1 repeats
JOURNAL FEBS Lett. 445 (2-3), 223-225 (1999)
PUBMED 10094461
COMMENT REVIEWED REFSEQ: This record has been curated by NCBI staff. The reference sequence was derived from AL603427.1, AB014588.1, AF148213.1 and AY358886.1.
On Jan 26, 2004 this sequence version replaced gi:11497610.

Summary: This gene encodes a disintegrin and metalloproteinase with thrombospondin motifs-4, which is a member of the ADAMTS protein family. Members of the family share several distinct protein modules, including a propeptide region, a metalloproteinase domain, a disintegrin-like domain, and a thrombospondin type 1 (TS) motif. Individual members of this family differ in the number of C-terminal TS motifs, and some have unique C-terminal domains. The enzyme encoded by this gene lacks a C-terminal TS motif. It is responsible for the degradation of aggrecan, a major proteoglycan of cartilage, and brevican, a brain-specific extracellular matrix protein. The cleavage of aggrecan and brevican suggests key roles of this enzyme in arthritic disease and in the central nervous system, potentially, in the progression of glioma.

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